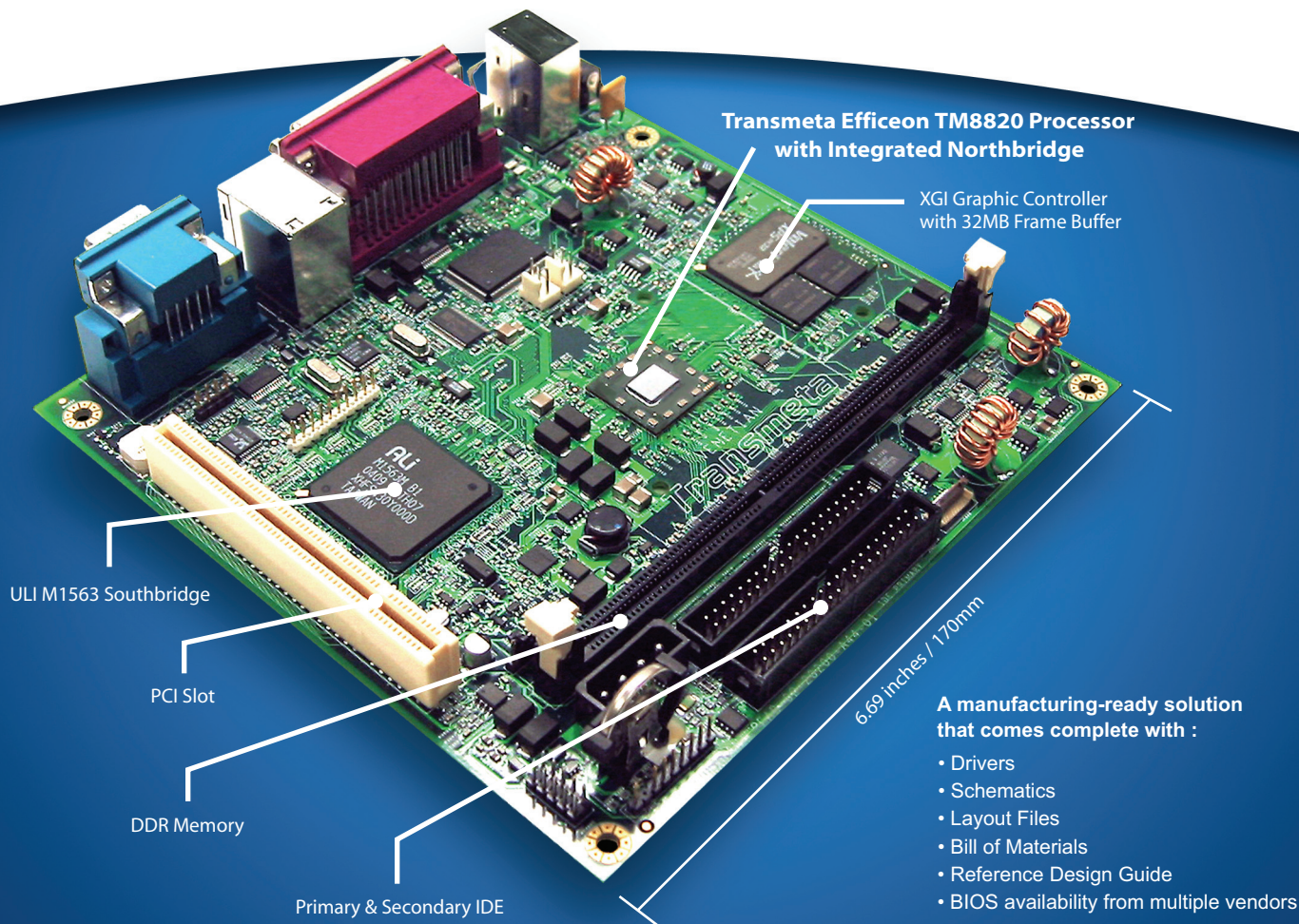


## Transmeta™ Efficeon™ TM8820 Reference Design Kit

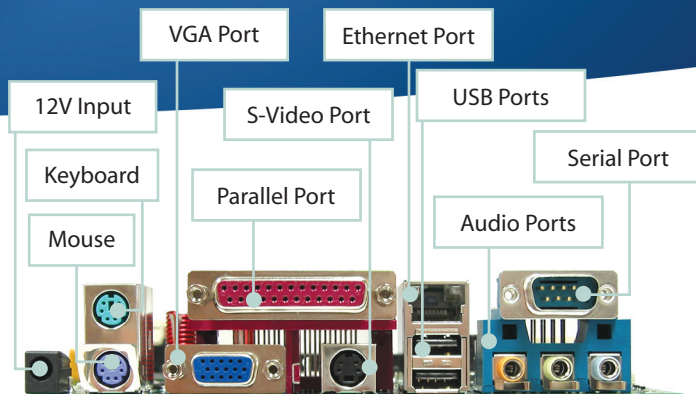
A high-performance evaluation platform for the second-generation 90nm Transmeta Efficeon Processor



The Transmeta Efficeon TM8820 manufacturing-ready reference design board is a 4-layer, Mini-ITX form factor motherboard. Measuring a scant 170mm x 170mm, it is more than 33% smaller than FlexATX form factor motherboards. This makes it ideal for small form factor and low-cost designs including thin-clients, wireless network devices, digital media systems, set-top boxes and silent desktops.

Designed for platforms demanding energy efficiency, low heat is also valuable for diverse industrial and computing uses including embedded controllers, silent desktops, automotive systems, point of sale and more.

In response to the escalating threat of computer virus attacks, Transmeta has included AntiVirusNX technology to provide enhanced security and safer computing by detecting common threats and viruses and rendering them harmless.



The Transmeta Efficeon TM8820 Reference Design Kit integrates many cutting-edge features including 10/100 Ethernet, integrated AGP graphics, display resolution up to 2048x1536, DDR memory, 4 USB 2.0 ports, Secure Digital Card connector, S-Video output, 6-channel audio output and a PCI expansion slot. On-board voltage regulators supply system and PCI slot voltages from a single 12-18V input source, so an ATX power is not needed.

## HIGH PERFORMANCE

### 8 Instruction Issue, 256-Bit VLIW Engine

- Fully Pentium 4-ISA compatible
- Up to eight instructions issued per clock cycle
- Up to 50% improvement in integer applications
- SSE, SSE2 and SSE3 multimedia extensions enables multimedia applications to run up to 80% faster per clock cycle than previous generation processors from Transmeta
- Large 1 MB L2 cache improves processor performance

### Advanced Code Morphing Software

- Improves performance and responsiveness over 1st generation Transmeta Crusoe technology
- Unique software based architecture is key to reducing power consumption and enabling future scalability and flexibility
- New generation Code Morphing Software technology leverages 256-bit VLIW hardware advances
- Enables quick, low cost improvements to performance and power consumption with updates of Code Morphing Software

## HIGHLY INTEGRATED ARCHITECTURE

### Fully Integrated Northbridge Core Logic

- On-chip DDR memory interface
- Integrated AGP 2.0 compliant graphics interface for industry standard, high performance graphics solutions at 1X, 2X & 4X data rates
- On-chip 400 MHz HyperTransport interface, 8-bits wide in each direction, provides 12x the I/O throughput (1.6 GB/sec aggregate bandwidth) compared to 32-bit, 33 MHz PCI
- Full support for ECC in L2 cache and northbridge memory controller

### Enables Small Form Factor Designs

- Northbridge integration reduces system chip count, power consumption and printed circuit board size

## ENERGY EFFICIENT DESIGN

### Enhanced LongRun Dynamic Power Management

- Enables longer battery life by dynamically adjusting operating frequency and voltage to match the performance requirements of application workloads
- Provides higher performance within smaller, thermally constrained environments

### Enhanced LongRun Thermal Management

- Maximizes performance within a thermal envelope
- Low thermal characteristics enable fanless designs for quieter and more reliable systems

## ADVANCED ANTIVIRUS PROTECTION

### AntiVirusNX Technology

- Works in conjunction with Microsoft's Data Execution Protection (DEP) to detect and prevent attempts by attackers to overflow memory buffers with malicious virus and worm content.

## Specifications

Processor	Efficeon 1.0 GHz at 3W or Efficeon 1.5 GHz at 7W
System Memory	512 MB DIMM
Southbridge	ULI M1563
Graphics Chip	XGI XP5 M32, on board AGP 4X
DirectX Support	DX8.1 Vertex Shader and Pixel Shader hardware DX9.0 software compatible
Display Resolution	Supports resolution sizes up to 2048 x 1536
Audio	Realtec ALC655 AC97 compliant audio codec
Ethernet	Realtek 8201CL 10/100 Mbps
PCI Expansion	Single PCI expansion slot
IDE	Two polarized 40 pin IDE Connectors
Super I/O	National Semiconductor PC87360 Super I/O controller
USB	4x USB 2.0
SD Interface	Yes
PC Board	Mini ITX form factor 4 layer PCB
Power Management	ACPI 2.0 compliant; supports Suspend To RAM (S3 state) and power down. Wake On Alarm. Wake on LAN. Wake On Switch
Power Supply	12-18 volt DC supply
Audible Devices	Piezo speaker
BIOS	Phoenix BIOS
Dimensions	6.69 x 6.69 [in], 170 x 170 [mm]

The TM8820 reference board is powered by the Transmeta Efficeon processor. Built upon an advanced 128-bit VLIW core that can process up to 8 instructions per clock, the Efficeon combines the processor and Northbridge functionality into a single integrated circuit, creating a single package that reduces board space by eliminating the Venetian reference design's need for a dedicated Northbridge chip.

Enhanced LongRun® dynamic power management technology delivers a compelling balance of high performance and integrated features in a small, compact design that facilitates innovation.

**Transmeta**  
CORPORATION

**efficeon**  
PROCESSOR

QUALITY MANAGEMENT SYSTEM  
CERTIFIED BY DNV  
ISO 9001:2000

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